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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/405,934	09/27/1999	PIERRE JORGENSEN	5509-00100	1061

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PILLSBURY WINTHROP, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER

NORTON, NADINE GEORGIANNA

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 11/05/2002

23

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/405,934

Applicant(s)

JORGENSEN, PIERRE

Examiner

Nadine Norton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 21, 23-31 and 43-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 21, 23-31 and 43-54 is/are rejected.
- 7) ☒ Claim(s) 21 and 23-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 21 and 23-25 were previously canceled in the amendment A filed 11-13-00 in paper no.8. As a result, it is improper for present claims 21 and 23-25 to be numbered as they are. The subject matter of the claims require new claim numbers because claims 21 and 23-25 no longer exist. In addition, applicant refers to claims 21 and 23-25 as still pending. Claims 21 and 23-25 are no longer pending because the claims were previously canceled.

Claim Rejections - 35 USC § 112

Claims 1, 21 (improperly numbered), 23-25(improperly numbered), 26-31 and 43-54 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant's newly added limitations directed at the specific exclusion of thermal energy in the cracking process, the equation "E-X", the specifically claimed enthalpy variation, and adiabatic conditions are not contained in the disclosure.

It is suggested that applicant point out the portions of the specification providing support for the newly added limitations and claims.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 21(improperly numbered), 23 (improperly numbered), 26-31, 43-46 and 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over the oral translation of German Patent (1,049,851) in view of "Modern Petroleum Technology" and Kosters (4,426,278).

Applicant is claiming several processes for converting hydrocarbons which might be laden impurities to light products that may be distilled. Applicant claims the processes involve preheating a hydrocarbon load, injecting it into a reactor and passing the load through a high speed jet.

German Patent (1,049,851) discloses a process for the production of light hydrocarbons by thermal cracking with a heat transfer gas which functions in a mechanical sense to transport the starting material and reaction products. See page 2, lines 19-20. The process involves the formation of a heated gas and a hydrocarbon mixture. The heated mixture is passed to a reactor. The mixture is vaporized in a chamber. See page 2, column 1, lines 55-67 and page 2, column 2, lines 1-10. Suitable feeds include high boiling point crudes. See page 1, line 4.

The reference of German Patent (1,049,851) succeeds in disclosing a hydrocarbon cracking process which involves the heating of a hydrocarbon and the addition of a heat transfer gas to the feed which is passed to a reactor. The disclosure of cracking encompasses applicant's shearing/splitting limitations. The reference's heat transfer gas is considered to correspond to

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applicant's jet containing energy. The reference's disclosure of the production of lighter molecules is considered to encompass applicant's breaking of substantially all the molecules into two parts because the lighter products are all portions of heavier molecules. In addition, the reference's disclosure of a high boiling point crude fraction meets applicant's heavy distillate limitation.

It is noted that the reference is silent about the jet mechanically shearing/splitting the molecules of the load to produce liquid hydrocarbons. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the high speed introduction through a nozzle inlet of German Patent (1,049,851) which is considered to correspond to a jet would accomplish the same mechanical shearing claimed by applicants because the same high speed injection is performed.

Several differences are noted between German Patent (1,049,851) and applicant's invention. German Patent (1,049,851) is silent about a reactor temperature of less than about 520°C and about a first temperature (preheating) that is about 20°C less than the second temperature. German Patent (1,049,851) is silent about shearing/splitting molecules in the absence of thermal cracking conditions while employing applicant's specifically claimed enthalpy conditions. In addition, the reference is silent about the velocity of the jet injected through the nozzle. Furthermore, German Patent (1,049,851) is silent about an additional soaking step.

The reference of "Modern Petroleum Technology" is cited to illustrate that conventional thermal cracking of crude is accomplished at 455-540°C. See page 280, lines 20-21. A conventional process involves "preheating". See page 280, lines 13-14. "Modern Petroleum

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Technology” also illustrates that conventional thermal cracking processes include soaking steps to complete cracking. See page 281, lines 4-6.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to that the process of German Patent (1,049,851) would accomplish a similar mechanism to break molecules to that claimed by applicant because the same process step responsible for splitting molecules (e.g. injection of jet) is disclosed by the applied reference. Applicant has not shown that a different form of energy is responsible for shearing/splitting molecules in the claimed invention.

The reference of Kusters (4,426,278) is cited to illustrate that preheating temperatures are selected based on the feed to be treated and that such temperatures are typically low enough to prevent significant cracking. See column 5, lines 24-29.

Since the reference of German Patent (1,049,851) does not limit the reactor temperature, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select applicants’ claimed reactor temperature because the reference of “Modern Petroleum Technology” illustrates that such temperatures are conventional for thermal cracking. Applicants have not shown anything unexpected by limiting the process to conventional temperatures.

In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select a first temperature (corresponding to a pre-heating temperature) which is 20-25°C less than the second temperature in the reactor because the reference of Kusters (4,426,278) illustrates that preheating temperatures are selected to be low enough to prevent significant cracking reactions. One of ordinary skill in the art would be motivated to select a

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temperature lower than the thermal cracking temperature employed because cracking is to be avoided during the preheating stage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select any jet velocity that would add sufficient mechanical energy in the process of German Patent (1,049,851), including applicant's specific 700 m/s, because the reference does not limit the speed of injecting so long as mechanical energy is imparted. Applicant has not shown anything unexpected with respect to the claimed gas injection velocity.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made desiring further cracking of the feed in German Patent (1,049,851) to include an additional soaking step because the reference because the reference of "Modern Petroleum Technology" illustrates that a soaking step is known to complete cracking reactions. Applicants have not shown anything unexpected by including an additional conventionally known step.

Claim Rejections - 35 USC § 103

Claims 24 (improperly numbered), 25 (improperly numbered), and 47-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent (1,049,851) in view of "Modern Petroleum Technology" and Kusters (4,426,278) as applied to claims 1, 21(improperly numbered), 23 (improperly numbered), 26-31, 43-46 and 51-54 above, and further in view of Watson (1,811,195).

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A difference is noted between the modified teachings of German Patent (1,049,851) and applicants' claimed invention. The modified teachings are silent about the use of steam as a heat transfer gas.

The reference of Watson (1,811,195) is cited to illustrate that steam is a known heat transfer gas for use in thermal cracking. See page 1, column 1, lines 14-30.

Since the modified teachings of German Patent (1,049,851) do not limit the type of gas injected into the feed, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select steam as the gas injected into the feed because the reference of Watson (1,811,195) illustrates that steam is known to accomplish cracking with the formation of lighter components.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Response to Arguments

Applicant's arguments filed 8-21-02 have been fully considered but they are not persuasive.

Applicant's argument asserting that applicant's invention distinguishes over the German reference because the German reference accomplishes thermal cracking instead of applicant's

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molecular shearing with mechanical energy are not persuasive. In response, it is maintained that the reference discloses the same process step (high speed jet) responsible for applicant's molecular shearing (note applicant's molecular shearing is considered to correspond to cracking because the shearing accomplishes the breaking of bonds). In addition, the reference specifically refers to the jet as imparting "mechanical energy". (See page 2, lines 18-20). It is not possible for applicant to distinguish the invention with a limitation (mechanical energy) disclosed by the applied reference. Furthermore, the fact that the reference does not state that the reference is accomplish applicant's "shearing" is not evidence that the same mechanism is not occurring. The combined art suggests applicant's process temperatures which would encompass the same type of energy. Since the reference discloses similar steps and the breaking of molecules, similar mechanistic conversions are considered to occur. Furthermore, the secondary reference of Kusters (4,426,278) illustrates that it is conventional to preheat a feed at temperatures low enough to prevent significant cracking.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nadine Norton whose telephone number is 703-305-2667. The examiner can normally be reached on Monday through Thursday from 7:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.

N.N.
November 1, 2002

NADINE G. NORTON
PRIMARY EXAMINER

